

Infrastructure Rehabilitation Program

Feasibility Study Grant Application

October 2003

Eligible - Feasibility studies for projects to replace or rehabilitate existing leaking or failing water distribution system components.

Not Eligible - Feasibility studies for projects to replace wells, replace or install domestic water meters, develop new water supply or surface water diversion, construct agricultural water distribution system improvements or that make improvements to private property.

Total Funding Authorized - \$3 million authorized for feasibility studies.

Maximum Grant Per Study - \$100,000.

Who is Eligible to Apply - Public agencies or incorporated mutual water companies that own and operate water systems serving 200 to 16,000 connections in economically disadvantaged service areas (median household income less than \$40,000 **and** unemployment greater than 9 percent).

Application Deadline - Continuous.

DWR Contacts –

Linda Buchanan, (916) 651-9645, e-mail lbh@water.ca.gov (administrative)

David A. Rolph, (916) 651-9635, e-mail drolph@water.ca.gov (technical assistance)

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If you need this publication in an alternate form, contact the Division of Planning and Local Assistance at (916) 651-9236 or the Department's Office of Water Education at 1-800-272-8869.

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Introduction

A feasibility study is conducted to determine the engineering, hydrologic, environmental, institutional, and financial feasibility of a proposed Infrastructure Rehabilitation project. If the preferred project alternative is found to be feasible, the results of the feasibility study should provide most of the information necessary to complete a subsequent Infrastructure Rehabilitation Program construction grant application.

The Infrastructure Rehabilitation Program under the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act (*Proposition 13, Water Code Division 26*) authorizes the California Department of Water Resources (DWR) to issue grants to public agencies and incorporated mutual water companies in economically disadvantaged service areas to finance feasible, cost effective, infrastructure rehabilitation projects and feasibility studies for such projects. Under the program, no single feasibility study may receive more than \$100,000. No more than \$3 million (5 percent) of the total \$60 million authorized may be used for feasibility studies.

Eligible feasibility studies include studies of proposed projects that replace, rehabilitate, or restore existing leaking water distribution systems that deliver water for domestic, municipal or industrial uses. Eligible components may include pipelines, tanks, pump stations, valves, flow meters, and all other appurtenant water delivery facilities. Eligible feasibility studies may also include studies of proposed projects that replace failing water distribution system components, such as tanks or pump stations, which threaten the health, safety, welfare and economy of the area relying on the system. These failing components need not be leaking; however, the applicant must provide documentation of the component's potential for failure.

Feasibility studies that are not eligible for funding include studies of proposed projects involving wells, surface water diversions, development of new water sources, agricultural water distribution systems, the installation of new domestic water meters or improvements to private property.

If a proposed feasibility study is to be phased, the application needs to be completed for a stand-alone phase of the study. Any financing in addition to this grant application must be secured before DWR will enter into a funding contract.

CALFED agencies, which include DWR, released the Bay-Delta Program Final Programmatic EIS/EIR on July 21, 2000 and a Record of Decision (ROD) on August 28, 2000. As described in these documents, the Bay-Delta Program includes strategies to address ecosystem health, water supply reliability, water quality, and levee system integrity. DWR will coordinate with CALFED to ensure that none of the Infrastructure Rehabilitation projects funded under the program are in conflict with CALFED goals and objectives.

This application is only for applicants seeking feasibility study grants for proposed Infrastructure Rehabilitation projects. A separate application is available for applicants seeking a construction grant for an Infrastructure Rehabilitation project.

Copies of the Infrastructure Rehabilitation feasibility study grant and construction grant applications are available on our web site at: **www.water.ca.gov/grants-loans**.

General Instructions

Who May Apply

Applicants must be either public agencies (cities, counties, cities and counties, joint powers authorities, or other political subdivisions of the State), or incorporated mutual water companies. Applicants must own and operate their water distribution system and have between 200 and 16,000 water service connections. The system must deliver water for domestic, municipal, or industrial uses. In addition, the service area must meet the economically disadvantaged criteria as set forth in Section 79151(c) of the bond law (an annual median household income less than \$40,000 and an unemployment rate greater than 9 percent, based on the most recent federal census).

PLEASE BE ADVISED: As required by Senate Bill 610, (Chapter 643, Statutes of 2001, Costa), agencies subject to the Urban Water Management Planning Act must have adopted an Urban Water Management Plan and submitted it to DWR to be eligible for Proposition 13 funding. If you have questions regarding your agency's responsibility under the Urban Water Management Planning Act, please contact David Todd, in DWR's Office of Water Use Efficiency, at (916) 651-7027, or by e-mail at dtodd@water.ca.gov.

Eligible Feasibility Studies

This grant program is intended to help fund investigative studies to determine the feasibility and cost effectiveness of proposed projects undertaken to reduce existing water distribution system losses or replace failing distribution system components. When considering project alternatives, applicants should place greater priority on those alternatives that will reduce or eliminate the greatest distribution system water losses and, if applicable, replace failing water distribution system components that pose the greatest threat to the health, safety, welfare and economy of the distribution system service area. Infrastructure Rehabilitation feasibility studies, as defined in Appendix III (page 21), are eligible for funding.

Geographic Scope

Feasibility studies throughout California will be considered for funding.

Conflict of Interest and Confidentiality

All participants are subject to State and federal conflict of interest laws. Failure to comply with these laws, including business and financial disclosure provisions, will result in the application being rejected and any subsequent contract being declared void. Other legal action may also be taken. Accordingly, before submitting an application, applicants are urged to seek legal counsel regarding potential conflict of interest concerns that they may have and requirements for disclosure. Applicable statutes include, but are not limited to, Government Code Section 1090, and Public Contract Code Sections 10410 and 10411 for State conflict of interest requirements.

Applicants should note that by submitting an application, they will waive their rights to the confidentiality of that application. DWR staff will review each application. Once the application is signed and submitted to DWR, any privacy rights as well as other confidentiality protections afforded by law will be waived.

How to Submit an Application

Applications may be submitted on a continuous basis. All forms and attachments are required for a completed application (see Appendix I, page 19 for a checklist of the attachments required for a completed application). Only completed applications will be evaluated and prioritized for funding. Incomplete applications will be carried forward to the next evaluation cycle.

Please call Linda Buchanan at (916) 651-9645 if you have any questions about completing this application.

Applications may be mailed or submitted in person. Please submit one original and five (5) hard copies and one (1) electronic copy, if available, of the application to:

The Department of Water Resources
Division of Planning and Local Assistance
Post Office Box 942836
Sacramento, California 94236-0001
Attention: Linda Buchanan

FedEx/UPS:
Department of Water Resources
Division of Planning and Local Assistance
1416 9th Street, Room 338
Sacramento, CA 95814
Attn: Linda Buchanan

Completed applications will be evaluated and prioritized for funding annually (December through March). DWR will determine the number of eligible applications to be funded at the close of each evaluation cycle based on the funding available and awards issued in the Spring of each year until funds authorized for the program are exhausted.

Prioritized applications not funded may, at the discretion of the applicant, be reconsidered without modification, or be revised to improve competitiveness.

Application Evaluation and Selection Process

Each application will be evaluated for completeness using the checklist contained in Appendix I (page 19). Applications will be evaluated and prioritized annually. Applications will first be evaluated to determine if they meet all of the Threshold Criteria listed below. Those applications that meet the Threshold Criteria will then be scored by the Ranking Criteria also listed below. The maximum score possible is 20 points.

Threshold Criteria

Applications for feasibility study grants must meet all Threshold Criteria in order to be further evaluated for funding. The Threshold Criteria, which must be supported by documentation contained in Parts A and B of this application package, include the following:

Part A Organizational, Financial and Legal Eligibility

Part B Feasibility Study Requirements

The information provided in Parts A and B will be reviewed and evaluated by DWR staff to determine if the requirements for all Threshold Criteria have been met.

Ranking Criteria

Applications that meet the Threshold Criteria will be scored by DWR staff based on the Ranking Criteria contained in Part C. Each Ranking Criterion will be scored on a scale of 1 to 5, with 1 being “Low,” 2 being “Medium/Low,” 3 being “Medium,” 4 being “Medium/High” and 5 being “High.” The score for each criterion will then be multiplied by a weighting factor to achieve a “weighted score” for each criterion. Next, the weighted ranking criteria scores are added to obtain a total score for the application. The maximum score for the Ranking Criteria is 20 points.

Staff will review applications that meet the Threshold Criteria and compile a list of feasibility studies proposed for funding based on scoring of the Ranking Criteria contained in Part C. Following each evaluation cycle, DWR will commit funding to eligible applicants in prioritized order based on the availability of funds.

Ranking Criteria Table

Criteria	High (5)	M/H (4)	Med. (3)	M/L (2)	Low (1)	Weight	Total
C-1. Adequacy of work plan						2	
C-2. Readiness to proceed						1	
C-3. Benefits Realized and information gained vs. costs						1	
TOTAL SCORE							

For the purposes of grant funding, applicants should not start work on their feasibility studies until after a commitment of funding has been issued by the State. Feasibility study work (as outlined in the applicant's work plan) that is performed before the commitment has been issued will not be reimbursed.

Preparation of contracts will begin as soon as studies are approved. However, it may take several months to develop and finalize the contracts for the successful applications, depending on the complexity of each contract and the readiness of the applicant. Funding agreements are not final until signed by authorized representatives of the applicant and DWR.

Applications meeting all of the threshold criteria but not selected for funding will be reconsidered for the next evaluation cycle. At the applicant's discretion, proposals may be revised to improve the application's competitiveness. DWR staff is available to provide technical guidance to applicants wishing to revise their applications. For assistance, contact David A. Rolph at (916) 651-9635 (e-mail: drolph@water.ca.gov).

Part A—Organizational, Financial and Legal Information *State of California, The Resources Agency, Department of Water Resources*

A-1

Application cover sheet

Application for an Infrastructure Rehabilitation Program feasibility study grant under the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act.

The _____
(Exact legal name of applicant for grant)

of _____
(Mailing address of applicant)

of the County of _____ State of California, does hereby apply to

the California Department of Water Resources for a grant in the amount of \$ _____

for a feasibility study of the following project under the Safe Drinking Water, Clean Water,

Watershed Protection and Flood Protection Act:

(Specify feasibility study title)

By _____ Date _____
(Original signature of authorized representative, see Section A-5 on page 12)

(Print or type name of authorized representative)

Title _____

Telephone (____) _____

Fax (____) _____

E-mail _____

A-2 Agency representatives

Project contact person:

Name _____

Title _____

Telephone (____) _____

Fax (____) _____

E-mail _____

Alternate contact person:

Name _____

Title _____

Telephone (____) _____

Fax (____) _____

E-mail _____

Type of Organization: _____

(Water district, irrigation district, city, etc.)

California Assembly Representative: _____

District No. _____

California Senate Representative: _____

District No. _____

Attach a copy of the agency's charter or enabling authority, or the mutual water company's articles of incorporation. Also provide a list of the names and titles of the agency's or company's officers.

Mark as Attachment A-2.

A-3 Feasibility study cost

1) Prepare a proposed feasibility study budget itemized by task. Contingency costs must be included in the budget. These costs must be a minimum of 15 percent of the total cost of the study.

(2) Provide financing information about the proposed feasibility study (*see below*).

Mark as Attachment A-3.

Total cost of feasibility study: \$ _____

Amount to be funded under the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act: \$ _____

Amount to be funded by the applicant: \$ _____

Indicate applicant's source of funds: _____

Amount to be funded externally: \$ _____
(Include any other pending loan or grant applications)

Lender/Grantor: _____ Lender/Grantor: _____

Amount: \$ _____ Amount: \$ _____

Interest Rate _____ Percent Interest Rate _____ Percent

Term: _____ Years Term: _____ Years

Annual Payment: \$ _____ Annual Payment: \$ _____

A-4 Authorizing resolution

Provide a resolution adopted by the applicant's governing body designating an authorized representative to file an application for an Infrastructure Rehabilitation feasibility study grant under this program. Appendix II (page 20) can be used as a model for this resolution.

Mark as Attachment A-4.

<p>A-5 Rate and service structure</p> <p>Attach the rate structure in effect on January 1, 1999, and the rate structure for the last three operating years.</p> <p style="text-align: right;">Mark as Attachment A-5.</p>
<p>Current estimated average monthly water bill: \$ _____</p> <p>Current Residential Average month: \$ _____</p> <p>Estimated average water bill as of January 1, 1999: \$ _____</p>
<p>*Total connections in service area: _____</p> <p>Number of residential service connections: _____</p> <p>Number of other service connections (commercial/industrial, etc., specify type): _____</p>
<p>Indicate volume of water delivered through system per year: _____</p>

***Water Service Connections**

Document how the number of service connections was determined. Count actual active domestic, industrial, and municipal connections (agricultural water connections do not count). Connections with current paid standby charges are allowable; abandoned connections are not. Provide documentation on the number of water bills issued. Also include copies of the agency's last three Annual Reports submitted to the Department of Health Services (these reports should include number of connections, description of service interruptions, etc.). If no annual reports have been submitted, explain the situation.

Applicants may consider "equivalent" connections for permanent multi-residential housing units – such as apartments, duplexes, and mobile home parks with permanent spaces (concrete slabs) – that are served by single connections (single water bill per facility). In this situation, one "equivalent" connection can be considered for each dwelling unit. However, this figure will need to be reduced in proportion to the typical vacancy rate for each facility. For example, if a 50-unit apartment complex has a vacancy rate of 10 percent, the number of equivalent connections would equal 45 (50 less $[50 \times 0.10] = 45$). Equivalent connections will not be considered for transient housing (campgrounds, motels, hotels, etc.), jails, prisons, schools, or other non-residential housing. Provide supporting documentation.

Attach a certification statement, signed and stamped by a California Registered Civil Engineer, that the applicant has between 200 and 16,000 water service connections within their service area.

A-6 Population data

Total population of service area:

Year-round/Permanent: _____

As of: _____

(Date)

Seasonal/Part-time: _____

As of: _____

(Date)

Seasonal peak population: _____

Persons per household: _____

(If applicable)

Source of information on population data:

*Unemployment Rate:

Provide the unemployment rate of the service area as based on the 2000 Census: _____%

Source of information on unemployment:

*Annual median household income of water service area as based on the 2000 Census:

\$ _____

Source of information on household median income:

What tax rate areas are included in the area to benefit from or pay for the project? *(This information is available from the county assessor.)*

County annual median household income:

(Available from the county planning department)

\$ _____

As of: _____

(Date)

Source of information on county median income:

Mark as Attachment A-6.

*Unemployment and Annual Median Household Income data are available from the 2000 federal census for cities, census designated places (CDPs), census tracts, and census block groups. Applicants must determine the appropriate socioeconomic geography that most closely approximates the boundaries of their service areas. Submit a map of the service area with the current census overlay used in determining the unemployment and annual median household income information. If the service area covers several census block groups, unemployment and median household income may need to be prorated by population (use census blocks). For assistance in determining this information, please contact Julie Hoang with the California Department of Finance at (916) 323-4086 Ext. 2531. See Appendix V (page 29) for an example of how applicants can determine if their service area meets the economically disadvantaged area eligibility criteria for both median household income (less than \$40,000 per year) and unemployment (greater than 9.0 percent).

A-7 Agency authority

Have the agency's attorney provide a written legal opinion addressing the following five questions pertaining specifically to this funding application. The response to each question must include a citation of statutory authority or other reference.

1. Does the applicant have the legal authority to enter into a funding contract with the State of California? If so, cite the statutory authority.
2. What is the statutory authority under which the applicant was formed and is authorized to operate?
3. Is the applicant required to hold an election before entering into a funding contract with the State? Cite the statutory authority or other reference.
4. Will the funding agreement between the applicant and the State of California be subject to review and/or approval by other government agencies?

If yes, identify all such agencies (e.g., Local Area Formation Commission, local governments, U.S. Forest Service, California Coastal Commission, California Department of Health Services, etc.).

5. Describe any pending litigation that may impact the financial condition of the applicant, the operation of the water facilities, or its ability to complete the proposed feasibility study. If none is pending, so state.

Mark as Attachment A-7.

Part B—Feasibility Study Requirements

B-1 Types of eligible feasibility studies

Eligible Infrastructure Rehabilitation studies are studies of proposed projects that involve the repair, replacement, restoration, or rehabilitation of existing water distribution systems that deliver water for domestic, municipal, or industrial uses. Proposed projects must reduce or eliminate significant distribution system losses or replace failing water distribution system components that threaten the health, safety, welfare and economy of the area served by the system. When evaluating different project alternatives, applicants should give highest priority to those alternatives that will eliminate or reduce the greatest distribution system losses and, if applicable, replace failing system components that pose the greatest threat to the health, safety, welfare and economy of the area served by that failing system component.

Eligible feasibility studies may include, but are not limited to, the study of the following distribution system facilities:

- Pipelines
- Pump stations
- Valves
- Flow meters
- Reservoirs
- Failing tanks

Feasibility studies that are **not eligible** for funding include studies of proposed projects involving water meter retrofits, installation of water saving devices or appliances, agricultural water distribution systems, and projects that develop new water supply or primarily expand existing water storage capacity or make improvements to private property. Note: proposed water storage tanks with capacities greater than that determined appropriate by the California Waterworks standards to meet existing demand are considered water supply projects and therefore are ineligible to receive funding under the Infrastructure Rehabilitation program.

B-2 Map and narrative description of proposed project

Provide a detailed map of the study area, preferably a 1:24,000 scale copy or original of a 7.5-minute USGS quad sheet. Provide a detailed narrative description of the proposed project. Discuss the purpose and goals of the proposed project in the context of the applicant's water management plans, and the project alternatives that will be evaluated.

Mark as Attachment B-2.

B-3 Work plan

Provide a detailed work plan describing the tasks that will be undertaken to complete the proposed feasibility study. This should include as much specific information as possible on the types of tests and analyses that will be performed and the reports that you intend to produce as supporting documentation. Quarterly progress reports will be required and should be included as work tasks.

It is important to schedule tasks in a logical manner. If there are one or more potentially limiting factors in terms of feasibility, tasks examining those factors should be scheduled as early as possible in the feasibility study. If a determination is made following those tasks that there is no feasible project alternative, the study should be stopped at that point. Note that a feasibility study report is still required.

The feasibility study should examine Infrastructure Rehabilitation project alternatives from an engineering, hydrologic, economic, environmental, institutional, and social basis.

The completed study should provide most of the information needed to enable the applicant to complete a subsequent application for an Infrastructure Rehabilitation Program construction grant for the preferred project alternative. The feasibility study applicant should review the application requirements for a construction project for this program and address all of the specific program requirements in the feasibility study work plan.

Typically, work plan tasks include:

- Identify the purpose of the feasibility study, including the need for a project; identify the goals to be obtained
- Review financial and technical background information
- Conduct rate structure review
- Conduct leak detection and measurement survey; locate leaks and determine existing water losses
- Determine daily water consumption
- Conduct water audits
- Conduct hydraulic analyses; pressure surveys; zone flow analyses
- Identify and evaluate failing system components; analyze the effects of past water service interruptions due to failures in water distribution system; determine if any system components pose a significant risk of failure and, if so, calculate the impacts in terms of threat to the health, safety, welfare, and economy of the area served by the system
- Develop and evaluate project alternatives; conduct system condition assessments and prioritization
- Identify the preferred project alternative; describe the existing distribution system to be replaced by the proposed project (length, diameter, type of pipe, condition and age of pipe); also describe the rest of the distribution system outside of the proposed project
- Determine the engineering and hydrologic feasibility of the preferred project alternative; include preparation of preliminary plans of sufficient detail to generate an engineer's cost estimate (typically, this ranges from a 10 to 30 percent plan level)
- Determine the economic costs and benefits of the preferred project alternative
- Determine the environmental impacts of the preferred project alternative; examine the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) requirements; if necessary, prepare an Initial Study for CEQA to determine if an Environmental Impact Report or a Negative Declaration needs to be prepared; develop mitigation measures if needed
- Determine which permits will be needed for the preferred project alternative
- Determine whether the preferred project alternative will comply with federal, State, and local laws, regulations, and guidelines
- Describe how local water conservation planning is being implemented
- Determine public support or opposition
- Determine ways to generate funds to finance the construction of the preferred project alternative
- Develop a work plan schedule
- Prepare quarterly progress reports, a draft feasibility study report, and a final feasibility report

Note: If the applicant has identified a preferred project alternative, the feasibility study funding may be issued to complete all necessary environmental documentation for the preferred project alternative, including CEQA/NEPA.

The feasibility study report should contain the results of all the work plan tasks, including the determination of whether the preferred project alternative is feasible.

Mark as Attachment B-3.

B-4 Timetable

Provide a timetable for accomplishing the specific tasks discussed in your feasibility study work plan. This should be realistic, especially if a number of preliminary studies must be accomplished before the feasibility study can be completed.

The timetable should show the start and end dates for the feasibility study milestones. DWR requires quarterly progress reports under this grant program. The timetable should preferably be in a horizontal bar chart format. Tasks may overlap.

The timetable should include benchmarks for the quarterly progress reports, a draft final report, a review of the draft by DWR, and a final report.

Mark as Attachment B-4.

Part C – Ranking Criteria

The information provided in Part C will be used to score applications that meet all of the Threshold Criteria contained in Parts A and B. Each Ranking Criterion will be scored on a scale of 1 to 5, with 1 being “Low,” 2 being “Medium/Low,” 3 being “Medium,” 4 being “Medium/High” and 5 being “High.” The score for each criterion will then be multiplied by a weighting factor to achieve a “weighted score” for each criterion. Next, the weighted ranking criteria scores are added to obtain a total score for the application (maximum of 20 points per application; see Ranking Criteria Table). The total score for each application will be used by DWR to select feasibility studies for funding as described in the section entitled “Application Evaluation and Selection Process” of this application package on page 6.

C-1 Adequacy of work plan

Adequacy of the work plan will be scored based on information provided in Section B-3.

Applications with detailed work plans that clearly describe the tasks to be done to obtain the information needed to determine if the preferred project alternative, once defined, will be feasible from an engineering, hydrologic, economic, environmental, institutional, and social standpoint will be scored “High.” Applications with vaguely worded, minimally documented work plans that do not clearly describe how the feasibility of the preferred project alternative will be determined will be scored “Low.”

C-2 Readiness to proceed with the feasibility study

Indicate the expected feasibility study start date. Explain the factors used to make the start date determination.

- ☐ Within three months from the date funded
- ☐ Within six months from the date funded
- ☐ Within nine months from the date funded
- ☐ Within twelve months from the date funded
- ☐ Greater than one year from the date funded – Specify the number of months until feasibility study work is anticipated to begin: _____.

Applicants, with supporting documentation, that are ready to begin the feasibility study within three months would be scored “High” for this criterion; within six months would be scored “Medium/High”; within nine months would be scored “Medium”; within twelve months would be scored “Medium/Low”; and greater than one year would be scored “Low”.

Mark as Attachment C-2.

C-3 Benefits realized and information gained vs. costs

DWR intends to maximize, to the extent possible, the benefits realized and information gained for the feasibility study funds available for this program. Based on the information provided in Parts A and B, DWR will compare the potential benefits that are anticipated to be realized and the potential information that is anticipated to be gained through the Feasibility Study to the anticipated cost of the Feasibility Study. Those applications that demonstrate the greatest potential to yield significant benefits and information for the money spent will be scored “High” and those that demonstrate the lowest potential will be ranked “Low”.

Appendix I—Checklist of attachments

Complete this checklist to confirm all sections and attachments to this application package have been completed or addressed. Clearly label any required attachments.

Part A

- ☐ A-1 Application cover sheet
(Please use the form provided in the application)
- ☐ A-2 Applicant representatives
- ☐ A-3 Feasibility study cost
- ☐ A-4 Authorizing resolution
- ☐ A-5 Rate and service structure
- ☐ A-6 Population data
- ☐ A-7 Applicant authority

Part B

- ☐ B-2 Map and narrative description of proposed project
- ☐ B-3 Work plan
- ☐ B-4 Timetable

Part C

- ☐ C-2 Readiness to proceed with the feasibility study

Appendix II

Sample resolution

Resolution No. _____

Resolved by the _____
(Governing body, city council, or other)
of the _____
(Agency, city, county, or other)

that pursuant and subject to all of the terms and provisions of the Safe Drinking
Water, Clean Water, Watershed Protection, and Flood Protection Act, and amendments thereto,
application by this _____
(Agency, city, county, or other)

be made to the California Department of Water Resources to obtain a feasibility study
grant for an Infrastructure Rehabilitation project (Chapter 8, Article 5).

The _____ of the
(Presiding officer, president, city manager, or other official)

_____ is hereby authorized and directed to
(Agency, city, county, or other)
prepare the necessary data, make investigations, sign, and file such application with the
California Department of Water Resources.

Passed and adopted at a regular meeting of the _____
(Board of Directors, Supervisors, etc.)
of the _____
(Agency, city, county, or other)

on _____ .
(Date)



Authorized Original
Signature _____

Printed Name _____

Title _____

Clerk/Secretary _____

Appendix III – Definitions

The words used in this application package have the meanings set forth below:

- a. “Applicant” means a local agency as defined in Section 79151 (f) of the Water Code located in an economically disadvantaged service area with no less than 200 and no more than 16,000 service connections.
- b. “Bay-Delta” means the San Francisco Bay/Sacramento-San Joaquin Delta Estuary.
- c. “Bond Law” means the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act; Infrastructure Rehabilitation Program, under the Water Conservation Account, as set forth in Division 26, Chapter 8, Article 5 of the Water Code (commencing at Section 79161).
- d. “CALFED” refers to the consortium of State and federal agencies with management and regulatory responsibilities in the Bay-Delta.
- e. “CALFED Bay-Delta Program” means the undertaking by State and federal agencies pursuant to the Framework Agreement dated June 20, 1994, to develop a long-term solution to water management, environmental, and other problems in the Bay-Delta watershed by means of a programmatic environmental impact statement/environmental impact report.
- f. “Economically disadvantaged area” means any area of the state for which both of the following statements apply:
 - 1) An annual median household income of less than \$40,000 based on the most recent federal census.
 - 2) An annual average unemployment rate of greater than 9 percent based on the most recent federal census.
- g. “Eligible costs” means costs of an Infrastructure Rehabilitation feasibility study or construction project that may be paid from funding made under the Bond Law. Funding awarded for feasibility studies of Infrastructure Rehabilitation projects, pursuant to the Bond Law, may be used for reasonable costs of engineering, geologic and hydrologic studies, and preparation of environmental documentation. Costs incurred prior to applying for or entering into a contract for funding, including preparation of the application to establish eligibility and costs for a feasibility study done to assist in the preparation of a construction grant application, may at DWR’s discretion be reimbursed from the grant proceeds.

Costs that **are not** eligible for grant funding include:

- 1) Costs, other than those noted above, incurred prior to applying for or receiving a grant,
- 2) Operation and maintenance costs,
- 3) Purchase of equipment not an integral part of the project,
- 4) Establishing a reserve fund,

- 5) Purchase of water supplies,
- 6) Replacement of existing funding sources for ongoing programs,
- 7) Support of existing agency requirements and mandates,
- 8) Purchase of land in excess of the minimum required acreage necessary to operate as an integral part of the project, as set forth and detailed by engineering and feasibility studies, and
- 9) Payment of principal or interest of existing indebtedness or any interest payments unless:
 - a) The debt is incurred after issuance of a letter of commitment of funds by DWR;
 - b) DWR agrees in writing to the eligibility of the costs for reimbursement before the debt is incurred; and
 - c) The purposes for which the debt is incurred are otherwise eligible project costs.
- h. “Engineering feasibility” means a determination by a civil engineer, registered to practice in California, that the proposed project can be designed, constructed, and operated to accomplish the purposes for which it is planned, and that it is planned in accordance with generally accepted engineering and environmental principles and concepts. Hydraulic analyses, leakage management analyses, pressure management analyses, zone flow analyses, system condition assessments and water audits are important factors to consider when determining engineering feasibility.
- i. “Environmental documentation” means written documents prepared and filed in compliance with all applicable laws and guidelines related to the protection of the Projects must result in the reduction or environment and resources of the State, including, but not limited to, California Environmental Quality Act, National Environmental Policy Act, the federal Clean Water Act, the California Fish and Game Code, and the California Endangered Species Act.
- j. “Failing distribution system component” means any water distribution system element that has a significant risk of failure within two years from the date of application. Examples of eligible failing distribution system components include, but are not limited to:
 - Failing water distribution system pipelines (raw water transmission lines, mains, laterals, valves, or other integral appurtenances)
 - Failing pump stations
 - Failing water tanks
 - Failing water distribution system controls such as flow meters or water level recorders

Wells, surface water diversions, development of new water sources, and domestic water meter retrofits are not eligible.

- k. “Feasibility study” means a study conducted for the purpose of determining the engineering, hydrologic, environmental, economic, institutional and financial feasibility of a proposed Infrastructure Rehabilitation project. Feasibility study results should provide most of the information

needed to develop a complete construction grant application. Feasibility studies must be project specific. General planning studies or reconnaissance level studies are not eligible since they do not have the objective of defining then determining the feasibility of a specific preferred project alternative involving construction.

In addition, feasibility studies for projects to replace wells, install a new domestic water meters, develop new water supply or surface water diversion, construct agricultural water distribution system improvements or make improvements to private property are not eligible for funding.

- l. “Financial feasibility” means a determination by DWR that the applicant can complete the construction project, or feasibility study, with the amount of funds requested in the grant application. If the project or feasibility study cannot be completed within the amount of funding requested, but the applicant can establish, to DWR’s satisfaction, that additional funds from other sources are available to complete the project or feasibility study, DWR may determine that the project or feasibility study is financially feasible. This determination will be contingent upon the applicant establishing to DWR’s satisfaction, that it has the ability to repay any loans identified as additional sources of funds for completion of the project or feasibility study.
- m. “Infrastructure Rehabilitation project” means a project located in an economically disadvantaged area for the repair, replacement, restoration, or rehabilitation of an existing water distribution system, that delivers water for domestic, municipal or industrial use. Facilities may include pipelines, pump stations, valves, flow meters, reservoirs and all other appurtenant water delivery facilities. Projects must result in the reduction or elimination of significant distribution system losses or replace a failing system component that threatens the health, safety, welfare or economy of the area relying on the water distribution system.

Projects to replace wells, install new domestic water meters, develop new water supply or surface water diversion, construct agricultural water distribution system improvements or make improvements to private property are not eligible for funding.

- n. “Local agency” means any city, county, city and county, district, joint powers authority or other political subdivision of the State, or an incorporated mutual water company.
- o. “Service connection” means the point of connection between the customer’s piping or constructed conveyance. A connection to a system that delivers water by a constructed conveyance other than a pipe shall not be considered a connection
- p. “Unemployed” means all civilians 16 years old or over who (1) were neither “at work” nor “with a job, but not at work” during the reference census week and (2) were looking for work during the last four weeks, and (3) were available to start a job. Also included as unemployed are civilians 16 years and older who did not work at all during the reference week and were on temporary layoff from a job, had been informed that they would be recalled to work within the next six months or had been given a date to return to work, and were available to return to work during the reference week, except for temporary illness.

Students, individuals taking care of the home or family, retired workers, seasonal workers enumerated in an off-season who were not looking for work, institutionalized persons, and persons doing only incidental unpaid family work (less than 15 hours during the reference week) are not

considered unemployed. This is because the U.S. Census Bureau does not consider them as being in the civilian labor force.

For more details, see the Employment Status section of the 2000 Census of Population and Housing, Summary File #3.

Appendix IV—Permit Checklist

Consider whether any of the permits listed in this Appendix may be needed for construction of your proposed project, if it is found feasible. Note: This list is not comprehensive; other permits may be required for your proposed project. An asterisk (*) indicates that you must obtain these permits, if applicable, prior to contract execution for a construction project.

Type I: Is the project located in the areas listed?

<u>Geographic Area</u>	<u>Agency</u>	<u>Permit</u>
From 3 miles offshore to 1,000 yards inland	Coastal Commission	Coastal Development Permit
San Francisco, San Pablo, and Suisun bays from high water to 100 feet inland	San Francisco Bay Conservation and Development Commission	Development Permit
Suisun Marsh	San Francisco Bay Conservation and Development Commission	Marsh Development Permit
Lake Tahoe watershed	Tahoe Regional Planning Agency	Development Permit
Floodways in the Central Valley	The Reclamation Board	Encroachment Permit
*Navigable waterways or streams affecting navigable waterways	U.S. Army Corps of Engineers	Section 10 Permit
*Wetlands, including coastal and inland waters, lakes	U.S. Army Corps of Engineers	Section 404 Permit for disposal of dredged material or placement of any fill material into wetlands, lakes, rivers or tributaries
	Regional Water Quality Control Board	Section 401 Certification
*Wild and scenic rivers	The Resources Agency	Approval of diversions; Finding of Compatibility

Type II: Does the project affect any of the resources listed?

<u>Resource</u>	<u>Agency</u>	<u>Permit</u>
Air	Air Pollution Control District	Authority to Construct and Permit to Operate for Activities emitting pollutants to the atmosphere
*Fish and wildlife habitat	U.S. Fish and Wildlife Service	Fish and Wildlife Agreements
	Department of Fish and Game	Streambed or Lake Alteration Agreements for Activities in streams or lakes and channels, and crossing spawning gravel protection
	Department of Fish and Game	Fish and Wildlife Agreements
*Water rights	State Water Resources Control Board, Regional Boards	Permit to Appropriate and State of Diversion and Use for Activities diverting surface water not previously appropriated
*Water quality	State Water Resources Control Board, Regional Boards	National Pollutant Discharge Permit or Waste Discharge Requirements for discharges to surface water; Water Reclamation Requirements
*Wetlands, including coastal and inland waters, lakes, rivers	U.S. Army Corps of Engineers	Section 404 Permit for disposal of dredged material or placement of any fill material into wetlands, lakes, rivers, or tributaries
*Navigable waters and tributaries to them	U.S. Army Corps of Engineers	Section 10 Permit for dredging, filling dock, groins, land jetties or for any obstruction or effect on the capacity of navigable waters
Navigable water and tributaries to them	Federal Energy Regulatory Commission	FERC License

Type II: Does the project affect any of the resources listed? (continued)

<u>Resource</u>	<u>Agency</u>	<u>Permit</u>
Beds of navigable waters	State Lands Commission	Land Use Lease for encroachments and docks
*Endangered species	U.S. Fish and Wildlife Service	Section 10a Incidental Take Permit
	Department of Fish and Game	Incidental Take Permit
Drinking water	Department of Health Services	Title 22 Drinking Water Standards

Type III: Does the project involve any of the following activities?

<u>Activity</u>	<u>Agency</u>	<u>Permit</u>
Power plants and transmission lines	California Energy Commission	Notice of Intention and Application for Certification
Generation of electrical power	Federal Energy Regulatory Commission	FERC Permit
Conversion of timberland to other uses	Department of Forestry	Timberland Conversion Permit
Cancellation of a Williamson Act Open Space	The Resources Agency	Approval of the Waiver of a Contract Cancellation Fee
Bridge construction	U.S. Coast Guard	Permit for bridges and causeways over navigable waters
Mineral prospecting and extraction of State lands	State Lands Commission	Prospecting Permit and Extraction Lease
Oil or gas well	Department of Conservation, Division of Oil and Gas	Oil or Gas Well Permit
Geothermal well	Department of Conservation, Division of Oil and Gas	Geothermal Well Permit

Type III: Does the project involve any of the following activities? (continued)

<u>Activity</u>	<u>Agency</u>	<u>Permit</u>
Geothermal prospecting and development on State lands	State Lands Commission	Geothermal Prospecting Permit and Extraction Lease
Encroachment on or across a State highway	Department of Transportation	Encroachment Permit; Utility Encroachment Permit
Construction, alteration, maintenance, operation, and removal of dams or reservoirs	Department of Water Resources, Division of Safety of Dams	Approval of Plans
Construction or alteration of dams	Federal Energy Regulatory Commission	FERC License
Dredging	Department of Fish and Game	Standard or Special Suction
Removal of sand, gravel, and dredge spoils from State-owned lands	State Lands Commission	Grant or Privilege
*Dredging or placement of fill or other materials or structure in wetlands	U.S. Army Corps of Engineers	404 Permit
*Water diversion from a State wild or scenic river	Regional Water Quality Control Board	401 Certification
Surface mining	The Resources Agency	Determination of Need and No Adverse Effect
	City or County	Reclamation Plan

Type IV: Property rights

Considerations

- Who owns or controls the land? (*Private owner, lessee, public agency owner?*)
- Does the grant applicant have the landowner's permission?

Appendix V—Determination of Economically Disadvantaged Area

Getting Census Data for Local Agency Infrastructure Rehabilitation Grant Applications—A Brief How-to Guide

What Census-based Criteria Are Used in Determining IR Grant Eligibility?

The civilian labor force unemployment rate and median household income as obtained from the census data in Census 2000 Summary File 3.

Obtaining Unemployment and Household Income Estimates

Getting the necessary data involves two steps:

1. *Identify the area* in which the local agency is located by census geography.
2. *Obtain the data* for that area.

Once these two steps are completed, the estimates for the local agency can be constructed.

Identifying the Area (1)

1. Draw the boundaries of the service area on a map that shows census blocks, block groups, and tracts.
2. List all blocks in the service area, noting the county, census tracts, **and** block groups within which they are located.

Identifying the Area (2)

If a whole block group or tract is within the area, then it is not necessary to list the blocks within that block group or tract. The end result for a local agency will be something like: Tracts 1, 2, 3; Tract 4:Block Group 1; Tract 5:Block Group 2:Blocks 1001, 1003, 1007, 1009, 1011, 1013 (partial).

Identifying the Area (3) - Remainders

If a block is only partially within the service area, include it on the list. Socioeconomic data is only provided for block groups or higher, and so the blocks and partial blocks must be converted to their proportionate equivalent of the block group in which they are located.

Proportionate Block Group Equivalents

To compute the block group equivalents, it is necessary to obtain the population for each block. Population for partial blocks should be calculated as proportional to the area of the block that is included inside the service area boundaries.

Obtaining the Data for Proportionate Block Group Equivalents

1. Go to www.census.gov/ and choose the American Factfinder link on the left.
2. Halfway down the page choose the “2000 Summary File 1” link under the “Data Sets” heading.
3. Once the Summary File 1 link is chosen, the next screen will provide choices as to kinds of tables. Choose “Detailed Tables.”

Obtaining the Data for Proportionate Block Group Equivalents (2)

1. Choose a geographic type – “Block”. Choose the appropriate state, county, census tract, and block group.
2. Choose the desired blocks. Click “Add”. The result will be a list of census blocks for which population will be obtained. Repeat the process by picking the geographic type “Block Group” and selecting the block group(s) in which the previously selected blocks are located. Select “next.”

Obtaining the Data for Proportionate Block Group Equivalents (3)

Choose the appropriate table – “P1 Total Population” and click “Add”. Click “Show Result.” The result will be the appropriate populations for the blocks. Partial blocks should have their population multiplied by the proportion of the block that is in the service area to get the estimated population for the those blocks.

Obtaining the Data for Proportionate Block Group Equivalents (4)

Sum the populations for all the blocks and partial blocks within a particular block group. Divide that population by the total population for the (whole) block group. That is the proportionate block group equivalent. The final result is then a list of census tracts, whole block groups, and block group equivalents. This is what needs to be passed on to DWR so that the appropriate local agency estimates can be made.

Where Do I Get Maps Showing Census Geographies, e.g. Blocks?

American FactFinder Reference Maps

- Go to the US Census Bureau Web site www.census.gov .
- On the left side of the homepage there are a number of choices in the blue bar – choose the one labeled “American Factfinder.”
- On the American Factfinder homepage, go to the bottom and choose the “Reference Maps” in the Maps section. Then drill down as far as you need. (These maps can be saved by right-clicking on them and choosing “Save Picture As...”).

Census 2000 Redistricting Block-level Maps

- Go to http://ftp2.census.gov/plmap/pl_blk/st06_California/ to find the California county index and choose the appropriate county.
- The first map in the resulting list, ending in “000.pdf” is an index map, showing the numbers for the appropriate block maps to choose from the list. Choose as many as needed.

Census 2000 Geography Place Block Maps

- Go to http://ftp2.census.gov/geo/maps/blk2000/st06_California/Place/ and choose the appropriate place.

Block-Level Maps on Paper

- Large format (33” x 36”) paper maps are available for use at many State Census Data Center affiliates.
- Call (916) 323-4086 for the location of the nearest affiliate.
- The US Census Bureau also sells block- and tract-level maps, look under “Geography” at www.census.gov/mp/www/Tempcat/Catalog.html.

Which Set of Maps?

In general, American FactFinder maps should be the first choice. They are the most flexible, as well as offering the quickest access for depicting a given area. They can be more difficult to read than the others, however. The redistricting maps may be preferred if one has a very small and irregularly shaped service area. The Geo place maps are ideal for single sub-city areas.

What Happens Next?

DWR will pass the Tract-Block Group-Proportionate Block Group Equivalent for any given local agency to the Demographic Research Unit (DRU) within the Department of Finance. DRU will use the information in conjunction with the extracted census data to construct the appropriate unemployment rate and median household income for the local agency.

Reminder

This information is necessary to determine if a local agency meets both eligibility criteria that define an economically disadvantaged area under the IR Program. Potential applicants are strongly encouraged to submit this information to DWR prior to application submittal

For More Information

Contact David A. Rolph in DWR, (916) 651-9635, for details concerning the program itself. Contact Andy Ruppenstein in DOF, (916) 327- 0103, x2526 for concerns regarding census maps or census data.

Appendix VI—Water Loss Measurement Guidelines

This grant program requires each applicant to determine water losses for their service area's entire existing distribution system and also for those portions to be replaced by the proposed project. The following guidelines are designed to assist applicants to make those water loss determinations. However, applicants are not limited to using these guidelines. If other methods are used, the applicant will need to provide justification for using the given method. Regardless of the method, it's important that applicants provide adequate supporting documentation (state assumptions and show calculations).

Applicants with very poor leak repair records, missing data, etc., could have a problem providing the Department with verifiable system water loss figures for the pipeline sections to be replaced by proposed projects, particularly if their systems are unmetered. Under these circumstances, applicants are encouraged to submit feasibility study applications instead of construction applications.

Metered Systems

It is important to be able to verify leak numbers (leak repair records, maintenance records, etc.), so provide an explanation as to how the numbers were obtained; include back-up documentation. Using the daily leak repair log, provide the number of leaks repaired, first for the pipeline sections to be replaced by the proposed project and then for the entire distribution system each year for the last three years. If significant pipeline replacement or rehabilitation has occurred in the distribution system outside of the sections to be replaced by the proposed project within the last three years, describe the work, including the time when it was done. If the work was completed a year ago, use the leak figures for the most recent year instead of the last three years. If the work was completed two years ago, use the last two years instead.

For metered distribution systems, the following method, based on leak concentration, may be used to develop a water loss estimate for the existing pipeline sections to be replaced by the proposed project:

- a. Develop a linear foot per leak figure for the entire distribution system – Figure “A”
- b. Develop a linear foot per leak figure for the pipeline sections to be replaced by the proposed project – Figure “B”
- c. Divide Figure “A” by Figure “B” to obtain a multiplier (in most cases, it would be expected that the pipeline sections targeted for replacement by the proposed project would have a greater concentration of leaks; therefore, the multiplier should be greater than 1)
- d. Determine the percentage of the entire distribution system length that the length of the sections to be replaced by the proposed project represents
- e. Multiply the total annual distribution system water loss (acre feet per year [AFY]) by the percent figure (0.XX) determined in Step “d” above; this will generate a “base” AFY water loss figure for the pipeline sections to be replaced by the proposed project
- f. Multiply the “base” AFY water loss figure from Step “e” by the multiplier from Step “c” to obtain the estimated AFY water loss figure for the pipeline sections to be replaced by the proposed project

Example: An applicant determined that their existing metered distribution system, 66,700 linear feet in length, has an unaccounted for water quantity of 25 percent or 200 acre feet per year (total metered production 800 AFY less 600 AFY for delivered sales [based on billing records] and other uses [for examples of other water uses, see Item 6 below]). The proposed project consists entirely of the replacement of 20,000 LF of pipe (30 percent of the total existing distribution system length). No major pipeline replacement or rehabilitation work has taken place during the last three years.

After analyzing their leak repair records, the applicant determined that for the entire distribution system a total of 82, 80, and 93 leaks (including mains and service lines) were repaired in 2000, 2001, and 2002, respectively, for an average of 85 leaks per year. Of that total, it was found by checking the daily leak repair log that an average of 55 leaks per year occurred in the pipeline sections to be replaced by the proposed project. The linear foot per leak figure for the entire distribution system was 66,700 LF divided by 85 or one leak every 784.7 LF (Figure A). The linear foot per leak figure for the pipeline sections to be replaced by the proposed project was 20,000 LF divided by 55 or one leak every 363.6 LF (Figure B). The multiplier is 784.7 LF divided by 363.6 LF, which equals 2.158. The applicant then calculated the “base” water loss figure by taking the unaccounted for water quantity for the entire distribution system – 200 AFY – and multiplying that by 30 percent (which is the percentage of the entire distribution system length that is being replaced by the proposed project) to get 60 AFY. Finally, the applicant multiplied the 60 AFY “base” water loss figure by the 2.158 multiplier to obtain the water loss estimate for the pipeline sections to be replaced by the proposed project, which is 129.5 AFY.

It is possible in some cases for the AFY water loss estimate generated in Step “f” to exceed the total distribution system water loss specified in the application. Obviously, the water loss for the pipeline sections to be replaced by the proposed project can’t exceed the estimated water loss for the entire distribution system, and an adjustment will be necessary. In this situation, the water loss total for the pipeline sections to be replaced by the proposed project cannot exceed 90 percent of the total water system loss unless the length of the pipeline sections exceeds 90 percent of the total system length (if that is the case, step up the 90 percent limit accordingly).

Applicants with metered distribution systems can use their annual unaccounted for water figures to determine water loss for their entire existing distribution systems (provide documentation). As mentioned in the above example, to obtain the unaccounted for water quantity for their systems, applicants need to subtract out their delivered sales and other uses from their water production figures. Other uses may include, but are not limited to: hydrant flushing, service line flushing, hydrant accident losses, draining reservoirs, reservoir overflow, reservoir inspection, chlorine and other agency maintenance activities, sewer jetting, and vandalism. Applicants should be prepared to explain their “other” uses. Make sure that the meter that measures water production (from wells, etc.) is properly calibrated and functioning. Otherwise, the meter will need to be recalibrated (the new production records should reflect that change), since poorly calibrated meters will not generate useful data.

Unmetered Systems

The leak concentration water loss estimate method described under Items 4 and 5 applies for metered distribution systems. However, applicants that have unmetered distribution systems along with elevated storage tanks may be able to calculate water loss through night flow measurements. Typically, night flow measurements are made between 2 and 5 a.m. when there is normally little to no water use for domestic or

other purposes (during the test period, make sure that there is no ongoing night irrigation). Supply pumps are shut down during the time of the test and water level changes are measured inside the elevated storage tank. Direct measurement of level changes is preferred over measuring changes in pressure because it is more accurate. You can also [download an article that describes how to make these measurements](#) (this article is taken from *On Tap*, a free magazine published by the National Drinking Water Clearinghouse, a program of the National Environmental Services Center. To sign up, please call toll free (800) 624-8301 or send an e-mail to ndwc_orders@mail.nesc.wvu.edu). In situations where it is determined that it is unsafe to make direct measurements, night flow measurements can also be made by using a properly calibrated pressure gauge and data logger to measure the pressure loss in the tank and then correlate that loss to a loss in water depth in the tank. For more information you can [download a file that describes the “pressure gauge” process](#) one agency used to develop a night flow water loss calculation.

If night flow measurements are made, the total length of the distribution system served by the given storage tank needs to be determined. Then calculate the percentage of this length that is to be replaced by the proposed project. If the amount is less than 100 percent, follow the steps described under the above Metered Systems heading to develop the water loss estimate for the pipeline sections to be replaced by the proposed project.

Applicants with unmetered distribution systems that are served by single tanks can use night flow measurements from those tanks to determine the total water loss for their existing distribution systems. However, if the distribution system is served by more than one tank, night flow measurements will need to be made from all of the tanks to determine total system water loss; don't just measure the tank that serves the pipeline sections to be replaced by the proposed project.

Zonal Metering

In some cases, applicants with metered systems may be able to calculate project water losses directly through zone metering. For example, if all the water being delivered to a given area can be measured by a zone meter and the proposed project will replace all of the area's pipelines, water loss would be equal to the difference between the zone meter delivery figures and the cumulative delivery figures to each customer in that zone. If the proposed project will replace only part of the area's pipelines, the applicant would need to follow the procedures listed under the Metered Systems heading. Note: for Step “a,” instead of using the entire service area's distribution system, the distribution system within the given zone would be used. Also, for Step “e” the total annual existing distribution system water loss (AFY) would be for the entire zone, not for the entire service area.

Water Tank Projects Only

Applicants proposing to replace leaking water storage tanks alone will need to be able to isolate the tank and develop a supportable water loss estimate for the project. Provide an explanation as to how the water loss estimate was developed and include back-up documentation.